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AGRICULTURAL USES

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BASEMENTS

Precast Basement Walls Carry Their Own Footings: A licensed system for precast basement walls is described. No poured footings are needed and wall panels can be delivered to the building site by a single truck. The ribbed and insulated walls have nailing strips ready for attachment of interior finish. **2 pp; 86:877**

BRIDGE DECKS

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Hydraulic Rams Used in Dismantling Bridge Formwork: Soffit formwork for a bridge was removed by supporting it with a steel grid and then gently lowering it to a desired level after falsework was removed. The method is reported to reduce stripping time and crew size to 50 percent of that required by conventional methods. **2 pp; 86:318**

MARTA's Concrete Box Girders Make Transit History: Assembly of 921 precast pieces to make a pair of bridges was done in record-breaking fashion when the Metropolitan Atlanta Rapid Transit Authority built the first concrete box girder rail structures in the United States. First designed to be cast in place, precasting of the girders saved much time and money. The construction procedures are described. **3 pp; 86:935**

CLEANING

Removing Stains from Concrete—A five-part article:

Part 1. Most offending stains can be removed by patience, properly chosen stain removal materials and correct procedures. Some agents dissolve stains, others decolorize them; methods of use include scrubbing or application of bandages or poultices. First advice is not to try to remove any stain without first identifying what caused it. Safety precautions to be observed during use of any of the stain removers are repeatedly stressed. **4 pp; 86:539**

Part 2. Methods of Removing Some Specific Stains from Concrete: Staining causes are presented in alphabetical order; this part covers stains caused by *Aluminum* and ends with stains attributable to *Finishing Discoloration.* **7 pp; 86:655**

Part 3. Removal of Stains from Concrete: Those covered in this part begin with *Fire and Soot* and end with *Moss.* **5 pp; 86:736**

Part 4. Removal of Stains from Concrete: Stains covered here begin with those caused by *Oil* and end with those due to *Wood.* **5 pp; 86:821**

Part 5. Chemicals Used for Removing Stains: An extensive table lists the common and generic aliases of the chemicals, suggestions on where they may be bought, their toxicity potentials, flammability, and their corrosiveness to flesh or to concrete, steel, wood or glass. **5 pp; 86:960**

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DAMS

Grout-filled Bags Save Lives: The slope of a dam face was altered to eliminate a deadly undertow in deep water at the bottom of a dam. Grout-filled polyester bags were stacked 5 bags deep in a stair-step fashion and held in place by driving 2½-foot-long epoxy coated reinforcing bars down through them at about 6-foot spacings. **3 pp; 86:721**

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seismic movement during the quakes, dynamic response of the soils, structures which did and did not fail, and the need for a general review of Mexico's construction technology and building codes. **4 pp; 86:379**

ESTIMATING

Computer-assisted Estimating: Although accounting areas such as payroll and general ledger are apt to be the most prominent uses of a computer in contractors' offices, its potential usefulness in estimating is just as great. Five strong advantages of computer-assisted estimating are cited. Auxiliary functions available with some estimating packages are described. **2 pp; 86:334**

FIBER REINFORCED CONCRETE

Polypropylene Fibers in Concrete: Laboratory data are cited concerning the effects of polypropylene fibers on the properties of concrete. The article also describes suggested applications for concrete reinforced with these fibers. **4 pp; 86:363**

How Well Do Polypropylene Fibers Control Cracking?: Interior and exterior flatwork installations with and without fiber reinforcement were examined in the Chicago area. In all cases, fiber manufacturers' recommendations had been followed. Because of many variables in construction procedures, specific conclusions could not be drawn about the effectiveness of fibers. Jointing practices would appear to be of considerable importance in the prevention of cracking. **5 pp; 86:371**

FINISHING

Techniques for Building Superflat Floors Demonstrated at World of Concrete: Details are given regarding techniques used in 1986 demonstrations of superflat floor construction. Also a part of the superflat floor demonstration was placement of a flowable floor topping material with 5000 psi compressive strength, and techniques used successfully for grinding floors. **2 pp; 86:498**

A Primer of Finishing Tools: This article describes the tools necessary for finishing and how to use them correctly. Tools discussed include straightedges, tampers, bull floats and darbies, hand floats, trowels, edgers, groovers, and brushes and brooms. **4 pp; 86:786**

Power Floating and Troweling: Efficient techniques that promise higher production are outlined and illustrated in diagrams. A drawing identifies the basic parts of floating machines and troweling machines, some of which can be used for either floating or troweling by interchanging float and trowel blades or by using combination blades. Pointers are given on correct use of the machines. **4 pp; 86:795**

FLOORS

Floor System Combines Precast and Cast in Place: A patented composite floor system is explained that allows rapid construction. It involves the use of precast prestressed beam forms, hollow-core precast planks, and cast-in-place concrete at pockets created by the beam forms as well as in the ends of the precast planks. **1 p; 86:574**

Measuring Flatness of Special Floors: Exact profiles of superflat floors can be obtained with either of two types of wheeled equipment. One is a recently introduced self-propelled electronic device that is linked to a computer to produce a continuous record of the floor slope. The other device is also self-propelled; as it travels along its guided path it plots the floor profile instantaneously on a paper-tape graph. **2 pp; 86:815**

FORMING

Choosing a Forming System for Concrete Floors and Roofs: Picking the forming system for the floors and roof of a cast-in-place concrete building is a critical decision affecting both speed of construction and building cost. This article presents an analytical way to choose systems for many different types of projects. Selection tables help pick the method best suited to site conditions as well as building size and shape. **5 pp; 86:5**

Wall Forms: Selecting the Best Ganged System: As demonstrated in a diagram accompanying this article, total forming costs may easily be 48 percent of the cost of a concrete wall. This makes it worthwhile to evaluate a number of form systems to determine which will be most efficient and economical for your job. While the article covers only gang form systems, the methods of analysis described may be adapted to other forming conditions. **5 pp; 86:21**

FORMING MATERIALS

Fabricated Wood Members Support Formwork: Manufactured wood sections available for use as basic support members for job-built formwork include I-beams or joists, double-I form joists, laminated rectangular beams and open-web lattice girders. These fabricated shapes offer the nailability of wood and have improved strength and stability of shape because their laminated construction resists shrinking, warping, twisting and splitting. Size, weight and strength of various members are given. **3 pp; 86:449**

Self-stripping Void-forming Machine Forms a Variety of Structures: The hydraulically powered machine with a core that shrinks to strip itself so it can be removed from hardened concrete can also expand itself to its original shape so it's ready for use in the next pour. The shrinking, self-stripping form can be used in either cast-in-place or precast construction. Increased production and decreased labor costs are advantages. 2 pp; **86:947**

GRINDING

Diamond Grinding of Concrete: Diamond saw blades and the varied uses to which they may be put are reviewed. Methods for their correct and most efficient use are explained. Diamond grinding for concrete pavement restoration is discussed as a viable alternative to expensive overlays. **3 pp; 86:952**

HIGH-RISE CONSTRUCTION

Metropolitan Tower: High Living in Concrete: The combination office building and condominium is made of reinforced concrete and rises 716 feet from its base. It is unique in that it sits on just 35,000 square feet of land, its first 18 stories are an L-shaped rectangular structure, and its 46-story condominium spire is triangular in shape. Construction details and problems faced are described. **4 pp; 86:859**

HISTORY

St. Peter's Basilica: Climax Building of the Renaissance: This is a review of changes and alterations in style that occurred during the 338 years between the start and completion of construction of St. Peter's basilica in Rome. Begun by architect Donato Bramante in 1454 and subsequently worked on by many architects over the years, St. Peter's was finally completed by Michelangelo. **4 pp; 86:455**

A Look Back at Concrete in the Canal Zone: A brief history of the building of the Panama Canal. The United States acquired the rights to finish the interoceanic canal from French builders who tried and failed to complete it. Construction required about seven years and the cost was reportedly $352 million. **1 p; 86:663**

Unity Temple: The Cube That Made Concrete History: Frank Lloyd Wright, the creator of Unity Temple in Oak Park, Illinois, described it as "the first building in America to be cast complete, ornament and all, in forms—and to be let alone as architecture after the forms were removed." The Temple's material of construction was reinforced concrete, even to its slab roof; its exterior finish was exposed aggregate. Article contains many details of architectural design and construction techniques. **4 pp; 86:807**

Log Cabin Home Preserves a Style in Concrete: Using specially built molds, an engineer from Yankton, South Dakota built his own authentic-looking concrete log cabin in 1911. The home is still in good condition and may soon be listed in the National Register of Historic Places. **1 p; 86:1162**

JOINTS

Jointing Irregularly Shaped Slabs: General principles for planning joint locations are discussed. For irregularly shaped areas, specially planned joint configurations are needed to avoid the common causes of cracking. **2 pp; 86:391**

(more)

LIFT SLAB

New Developments in Lift Slab Construction: Construction sequence for technique of the lift slab system developed in the 1950s and improvements made since then are reviewed. **3 pp; 86:115**

MANAGEMENT

Construction Project Planning and Scheduling and the Microcomputer: Formalized scheduling techniques and the microcomputer can go hand in hand to aid the constructor in better planning and scheduling of projects. The constructor must establish his manual procedures first, then be realistic about what the computer can and cannot do. He should also do a careful performance and cost analysis of the many software programs that are available. **4 pp; 86:153**

Job Acceleration—What Does It Really Cost?: Suing for damages caused by delay is an old story; suing for damages caused by job acceleration is another story. Damages (costs) caused by forced acceleration of a job are real and should be considered when payment for accelerated completion is agreed upon. The article describes five pertinent questions the contractor should ask himself before claiming damages. **5 pp; 86:178**

Insurance: Do You Really Have Enough Coverage?: First, obtain a good understanding of what coverage various types of insurance policies provide and then familiarize yourself with grey areas that must be covered at the time such policies are written. Discussed in this article are the all risk policy (forms for which vary from insurer to insurer and typically cover damage to property but not to persons), and the comprehensive general liability policy, coverage of which is widely misunderstood. **3 pp; 86:194**

Sell Your Claims to the Owner: McNeill Stokes counsels that once events which might lead to claims occur on a job, both parties should immediately attempt resolution of the issues. Deferring claims normally results in larger claims eventually. But managing a claim on the front end may resolve the problems and avoid a potentially larger claim. The steps a contractor should take in getting an owner to accept his claim are explained, and the importance of timing of his presentation is discussed. **2 pp; 86:222**

Legal Remedies for Quantity Underruns and Overruns: Not infrequently, a ready mix supplier is faced with a quantity overrun or underrun and the question arises as to how the risk of such a situation can be fairly shared between the purchaser and the supplier. Rules for dealing with these situations have been developed in the courts over the years. The rules are explained and summarized under the headings of: obvious estimating errors; owner's disclaimers; exceptions to disclaimers. **3 pp; 86:236**

Owning Your Equipment: the Costs: Determining actual costs of owning and operating your equipment is a challenge in bidding. Jobs must be bid with equipment costs in mind, and the items included and methods used must be acceptable in costing claims. This article covers the following aspects of cost determination: depreciation, interest on investment, taxes, insurance, storage and handling, major repairs and overhaul costs. **2 pp; 86:239**

Red Tape Problems with the IRS: Information is given about how to contact an IRS Problems Resolution Office (PRO) for help when you have a conflict with the IRS. The PRO does not handle legal problems or rule on whether or not you owe a tax or taxes, but it does handle frustrating administrative problems. **1 p; 86:493**

Inspect Your Checks: A warning is given about what not to do when a check is received with the notation "Paid in Full" when it really does not cover the amount of a debt. Striking out the notation "Paid in Full" constitutes a material alteration of the check and discharges the party who issued it. This and other warnings are pointed out. **1 p; 86:497**

Contractors Subcontracting Internal Operations: There are benefits for construction companies to be gained by subcontracting work traditionally done by office, staff and maintenance personnel. The benefits include payroll savings on Social Security taxes and elimination of unemployment insurance, pensions and fringe benefits. To establish credibility with the IRS, it must be proved that the worker is a subcontractor rather than a regular employee. Several suggestions are given that will help substantiate the claim. **1 p; 86:572**

MARINE CONCRETE

Tremie Concrete: The use of tremies for placing concrete during construction of caisson seals, bridge piers, drydock walls and similar structures calls for careful planning and attention to details. Explained here are concrete mix proportioning, equipment, start-up of a tremie placement, precautions during placement, control of discharge elevation of the tremie pipe, and methods for preventing or dealing with pipe blockages. **3 pp; 86:123**

Dutch Storm Surge Barrier Nears Completion: This is an update on the construction of the Netherlands Delta Project, a huge concrete barrier intended to prevent storms in the North Sea from flooding large sections of the mainland. The barrier consists of 65 prestressed concrete piers linked by steel gates that will remain open during periods of calm and close when a storm is imminent. **2 pp; 86:898**

MARKETING

Marketing Concrete Streets: Although the federal-aid highway program is always very highly publicized, the market for public streets has the potential to be several times greater. The job of concrete paving contractors or ready mix concrete producers is to demonstrate to city officials that it costs a city more *not* to have a quality concrete paving program than to have one. An outline is provided from which contractors and ready mix suppliers can develop a street marketing plan. **4 pp; 86:648**

MIX DESIGN

The Contractor Needs More Than Slump Control: Slump test results have limitations in that the results do not always reveal properties such as workability, pumpability and finishability; and they may not be a good indicator of strength. To understand that slump can vary despite a constant water content, consideration must be given to the materials used in a specified mix: aggregate grades (coarse, intermediate or fine), and mortar (fines and paste) content. **3 pp; 86:139**

PATTERN STAMPING

Stamped Concrete: Article offers an in-depth look at economic advantages of pattern stamped concrete, tools required and the types available, characteristics and mix designs of concrete for stamping, and general and specific procedures for the stamping process. **5 pp; 86:775**

PAVEMENTS

The Myth of Public Opposition to Tolls: Public approval of costs for four well-known toll roads debunks the theory that motorists disapprove the building of toll roads. In addition to raising monies for building such roads, toll proceeds help take care of repair and maintenance of highways. **2 pp; 86:322**

PAVING

Paving with Roller Compacted Concrete: Recent experience indicates that roller compacted concrete (RCC) may be suitable for high quality, high speed pavements, with lower cost being a big advantage. Detailed descriptions of mixes and placement techniques are given here for six separate instances where RCC paving has been used successfully. **6 pp; 86:287**

Progress in Paving Equipment and Construction Methods: Developments in the Federal Highway Administration's pavement restoration, rehabilitation, resurfacing and reconstruction program are covered in some detail. Factors are identified that help determine which of the four procedures would be appropriate in a given situation. Discussions cover economic considerations, recent developments in equipment, techniques for its use, and proper selection of materials for satisfactory pavement performance. **4 pp; 86:439**

Pavement Cost Comparisons: Analyses of costs for concrete pavements versus asphalt pavements demonstrate the superiority of concrete. Tables are used to compare annual costs of concrete and asphalt pavements, total lifetime costs, discount-

ed maintenance costs, and long-term performance of concrete versus the slightly lower initial cost of paving with asphalt. Alternate versus competitive bidding of jobs is discussed; it is concluded that alternate bidding is not without its disadvantages. **4 pp; 86:463**

Concrete Curb and Gutter Construction: There's a profitable market for curb and gutter work. Slipforming is the most economical construction method if there's a significant volume of work involved. But for small jobs, stationary forms may be more cost effective. This article offers a review of the equipment needed, methods used and cost comparisons to consider if you're thinking about getting into this type of business. **6 pp; 86:699**

PAVING BLOCKS

Concrete Pavers: This article contains a comprehensive summary of the types of pavers available; advantages of their use; how they effect long-lasting and efficient load transfer in industrial situations; methods of design and construction and cost variables. **5 pp; 86:105**

PRECASTING

Building a Precast Prison: Using a sequentially timed fast-track precasting schedule integrated with erection operations, 19 two-story buildings at an Ohio correctional institution were completed in about 8 months. Many of the precast elements were made 185 miles away, trucked to the site, and erected straight from the delivery trailers in about the same order in which they were made. **4 pp; 86:145**

PROBLEM CLINIC

Problem Clinic: January 1986 (**2 pp; 86:40**) topics:
- Detection of the presence of fly ash in fresh concrete
- Aluminum straightedges safe to use
- Explanation of wind chill and the freezing of concrete

Problem Clinic: February 1986 (**4 pp; 86:160**) topics:
- Superplasticizer trouble with low-sand mix
- Use good jointing practices
- Cracking of new topping
- Type of popout depends on the shale
- Cracking in floor cast over plank
- Keeping concrete particles out of food
- Expansive cement concrete mix too stiff
- Entraining air in low-slump dense concretes

Problem Clinic: March 1986 (**2 pp; 86:329**) topics:
- Determining moisture in aggregate for mix proportioning
- Cleaning sealant off white concrete

Problem Clinic: April 1986 (**1 p; 86:394**) topics:
- Scaling concrete
- Concrete sticking to curb forming machine

Problem Clinic: May 1986 (**3 pp; 86:482**) topics:
- Controlling cracking of driveway corner
- Concern over cover after sandblasting
- Whiteness not required of clear curing agent
- No error in these published times for removing support
- Remove and replace or top with unbonded overlay?
- Prepare for the unpredictable
- Don't repair outdoor plastic shrinkage cracks

Problem Clinic: June 1986 (**2 pp; 86:570**) topics:
- What to do with a rained-on surface
- Preventing curling of slabs
- Safety with bull floats

Problem Clinic: July 1986 (**1 p; 86:647**) topic:
- Standards for concrete pavement parking lots

Problem Clinic: August 1986 (**2 pp; 86:744**) topics:
- Using waterstops
- Internal vibration of flatwork
- Letters for imprinting concrete

Problem Clinic: September 1986 (**1 p; 86:819**) topics:
- Tool for jointing
- Trowel chatter

Problem Clinic: October 1986 (**2 pp; 86:894**) topics:
- Deflection can curl slabs too
- Floor flatness specification needed

Problem Clinic: November 1986 (**1 p; 86:966**) topics:
- Expanded metal bulkheads
- Brooming

PUMPING

Walls Pumped from the Bottom Up: A detailed account is given of techniques devised for pumping concrete from the bottom up in the construction of 11-foot-high serpentine wall sections. The sections contained so much tightly spaced reinforcement that consolidation of concrete placed from the top down would have been difficult or impossible. Also given are details of the mix proportions designed to produce a pumpable 4000-psi concrete that would produce a smooth-faced architectural finish. **3 pp; 86:533**

Special Frame Supports Placing Boom Mast: Laying pump placement line on the decks would have disturbed extensive duct work in the floors of a five-story building. Article describes how special mast supports for a separate placing boom were designed to span 10- by 22-foot HVAC ducts. **1 p; 86:573**

READY MIXED CONCRETE

What Happens to Leftover Ready Mix?: Leftovers can be a nagging overhead or a profit center, depending on a lot of variables. Economics of reclaiming operations are discussed and types of reclamation equipment are described. **5 pp; 86:299**

RECREATIONAL USES

Play Is Still Brisk on 22-year-old Concrete Tennis Courts: Banks of tennis courts in Illinois have achieved a remarkable 22-year service record and are still in excellent condition. The 5-inch-thick slabs are high quality air-entrained concrete and have substantial reinforcement with No. 5 rebars. There are no joints except under the net and between courts. **2 pp; 86:469**

REINFORCEMENT

Reinforcing with Stainless Steel: A very thin, chromium-rich oxide film that forms on a stainless steel surface makes the metal chemically inactive and resistant to corrosion. Additionally, stainless steel is nonmagnetic and is thus the ideal candidate for reinforcing bars in structures housing devices such as nuclear magnetic resonance units. **1 p; 86:46**

Connection Boxes and Strips Eliminate Projecting Rebar at Construction Joints: Patented prefabricated boxes or plastic planks containing exactly dimensioned reinforcement are described for use where reinforcing steel must pass through a construction joint to lap with bars in another concrete placement and establish continuity. **3 pp; 86:552**

REINFORCING STEEL

Computer Cuts Column Costs: A $250,000 saving resulted when a computer program was used to study costs for more than 1700 columns in a high-rise building in Chicago. Some notable conclusions were that round columns cost less than square ones (because of formwork economies), more economy can be obtained with highest available concrete strength than with steel strength higher than Grade 60, and the most economical column design uses about 1 percent vertical reinforcing steel. **2 pp; 86:478**

REPAIR

Patching Architectural Concrete: Trial and error approaches to corrective action on architectural concrete can be a costly mistake. Plan patching procedures well in advance of a need for them and keep detailed records of materials for mix designs devised, tool selection, patching procedures—and even the technical and artistic skills of available finishers. Helpful information is given on mix designs, color selections, mixing procedures, mix application and initial texturing, curing, final finishing and evaluation of results. **4 pp; 86:623**

Equipment for Cleaning or Preparing Concrete Surfaces for Repair: When concrete flatwork has to be resurfaced, the first steps in the process are often the most critical. Repairs won't last long if overlays or coatings don't bond properly to the underlying concrete. The roles of scarifiers, scabblers, abrasive blasters and waterblasters are explained for various types of surface preparation. Factors to be considered in choosing the right equipment for the job are discussed. **6 pp; 86:927**

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RESIDENTIAL

Uses of Reinforcement in Homebuilding (Part 3 of a series on residential concrete): Usually, steel reinforcement of concrete is not needed in one- or two-family houses, but it may be needed to comply with local practices or building code requirements. In some areas soil or seismic conditions require conventional reinforcing steel or post-tensioned systems. Four classifications of slabs for one- and two-family houses are listed in a table detailing use of reinforcement; explanations and diagrams illustrate its proper installation. **4 pp; 86:29**

Treatment of Joints and Embedded Items (Part 4 of a series on residential concrete): This article is primarily concerned with the joints (isolation, contraction and construction) needed to allow a concrete structure to function properly. It also gives some instruction about installing various embedded items that may be required: sleeves, anchors and other inserts, waterstops, heating ducts, radiant heating systems and snow melting systems. **6 pp; 86:561**

Concrete Roof and Walls Enclose a Superinsulated Home: A system recently developed in Florida uses expanded polystyrene foam forms, shotcrete walls, and pumped concrete on the roof to construct the integral frame of an economical shell that keeps the interior space free of load-bearing walls. A crew of 8 can complete the heavily insulated 2000-square-foot home in 4 days for only $7 per square foot. How they go about it is explained. **3 pp; 86:874**

Hollow-core Concrete Floors Over Basements: A Toronto developer uses 4x30-foot precast prestressed hollow-core panels as the ground floor over cast-in-place basements of single-family homes. No posts or walls are required to support the panels, giving the owner maximum flexibility in interior space planning and saving the builder the cost of steel columns and beams down the center of the basement. The floor helps protect against fires which originate in basements. It can also be a source of thermal storage. **2 pp; 86:881**

Mountainside Concrete Home: Article features photos and a description of an award-winning sitecast residence in Utah that hugs the north face of a steep slope where snow accumulations are 12 or more feet. **2 pp; 86:887**

ROOF SYSTEMS

Concrete Tile Roof has 50-year Warranty: Authorized roofing contractors are using durable, integrally colored concrete tiles for roofing on new homes and to renovate older homes. Such roofs are both decorative and fire resistant. **1 p; 86:885**

SAFETY

Trenching Safety for Concrete Contractors: The Subpart and Section of OSHA Standards relating to "Excavations, Trenching and Shoring" are identified and some of the definitions contained there are quoted. Eight hazardous trenching conditions are cited and explained briefly. **3 pp; 86:556**

When the Problem is Fire, the Solution is Concrete: Building code authorities permit construction with a variety of materials as long as fire endurance and fire resistance meet code requirements. Factors which code requirements do not take into account however include the behavior of a structure beyond a fire-rated time, reuse of a structure after a fire, and damage to a building's contents. **3 pp; 86:633**

Hazards of Double-deck Single-post Shoring Systems: In the opinion of this author (a safety engineer), inherent instability and faulty erection practices make double-tier shoring systems vulnerable to failure and it is probable that such shoring should not be permitted. He notes some precautions to observe where double-decking *has* to be used and lists some design and construction practices to improve strength and stability of such shoring. **3 pp; 86:713**

SCHEDULING

Concrete Chapel Built on a Fast Track Schedule: A concrete chapel was built in a total of 88 days and on a budget of $175,000. **1 p; 86:950**

SCULPTURE

Concrete Fountain Takes Its Place Among the Roses: This describes the technology involved in creating a precast fountain 28 feet in diameter that now serves as centerpiece for Chicago Botanical Garden's rose garden. **1 p; 86:35**

T. J. Neil is Still Sculpting . . . and on a Grander Than Ever Scale: Statues described in this article are a colorful 18-foot-high, 10-ton replica of a lobster fisherman and a 50-foot-high, 70-ton King Kong gorilla. Neil's mix designs and reinforcement details are described. **2 pp; 86:218**

White Ferrocement Serves as Sculptor's Medium: Sculptor Frederic A. Nassauxs' techniques and materials for creating a ferrocement statue of Isadora Duncan are described. **2 pp; 86:314**

Color Concerto: Concrete Frames Faceted Glass: Faceted slab glass supported in a framework of reinforced white-cement mortar was chosen to create an 11-foot-high experience in sculptured color—a triad of yellows, oranges and reds. Article describes the method of faceting the thick glass, mix design of the mortar for the framework of the sculpture, assembly of the 35 sections which make up the total sculpture, and achievement of a rough finish texture. **3 pp; 86:547**

Sculptor Moves form Concrete to Gypsum Cement: The jagged and textured cast towers and other free-standing totems created by Ohio artist Elizabeth Burger are made of a gypsum cement instead of concrete. Her work is illustrated and a brief description is given of the process by which she creates her art. **1 p; 86:734**

SEAWATER CONCRETE

Seawater Concrete Process Developed: Developed in France, the new seawater concrete process uses a chemically modified portland cement that reportedly allows hydration with water containing up to 100 grams per liter of salts. The one sizeable project to date using the new process is described. **2 pp; 86:401**

SHORING

Two-day Construction Cycle for High-rise Structures Based on Use of Preshores: A company's procedure described here for using *preshores* during the stripping of primary forms and shores shows it to allow fast cycling of fewer sets of primary forms while maintaining full support of 1-day-old floors. The day-by-day steps involved are explained and illustrated. **5 pp; 86:307**

TESTING

Why Low Cylinder Tests in Hot Weather?: Of several causes, ***testing procedure*** may be number one. This is substantiated by research done by the National Ready Mixed Concrete Association and publicized in a report titled "The Effect of Temperature and Delivery Time on Concrete Proportions." The report contains information with immediate practical application for any contractor, ready mix producer, or specifier who may face problems of low cylinder strength tests during hot weather construction. **3 pp; 86:15**

Directory of Specialized Concrete Evaluation and Testing Services: Directory includes names, addresses and telephone numbers of firms providing specialized evaluation or testing services to the concrete industry. Coded entries delineate both the broad categories of services these firms offer and their specific test capabilities. Listings are arranged by state. **3 pp; 86:67**

Pulse-echo Testing: This nondestructive testing procedure can disclose the presence and location of discontinuities in concrete and minimize costs for concrete removal and replacement. Three examples illustrate the value of the test and how it has been used. Who should conduct the tests, what the costs may be and how quickly results of the testing can be available are discussed. **4 pp; 86:129**

Yield of Concrete: Methods for yield measurement based on a unit weight test and for yield calculation based on absolute volume are explained here. Yield checks should be part of a quality control plan. **3 pp; 86:313**

Don't Apply Floor Coverings Too Soon: Moisture in a concrete slab can reduce adhesion of floor-covering materials such as resilient tile or sheet flooring, paints, coatings and sealers. Practical jobsite tests, some with and some without moisture meter equipment, are described that can indicate whether a concrete slab is sufficiently dry for application of a covering. Ten usually recommended steps are noted for constructing a moisture-resistant concrete floor on ground. **3 pp; 86:472**

Correct Concrete Testing Procedures Are Important: Uniformity is a key word in correct testing methods. Without it, test results can't fulfill their purpose, which is to detect changes in the concrete that could affect performance. This article points up some common errors made in conducting field tests of concrete slump, air content and compressive strength. **2 pp; 86:724**

Certification of Concrete Technicians: The American Concrete Institute is developing a comprehensive series of certification programs covering the field of concrete construction. The program for Field Grade I Technician includes a one-hour written (or oral) test and performance of 7 physical tests of fresh concrete according to ASTM procedures. Programs are sponsored by various trained groups, with ACI chapter personnel doing the testing. **3 pp; 86:727**

The Importance of Selecting a Qualified Testing Laboratory: The National Bureau of Standards operates a National Voluntary Laboratory Accreditation Program which has been evaluating the proficiency (or lack of it) of testing laboratories since 1979. The program is described. **2 pp; 86:731**

Every Flatwork Contractor Should Own an Air Meter: The importance of air content in concrete cannot be overstated. The two standard methods (pressure method and volumetric method) for measuring air content are explained. **2 pp; 86:801**

Boy Researcher's Work Helps Save Money in Contract Dispute: Tests done by a 10-year-old boy—out of personal curiosity—involved the effect of freezing concrete at an early age. The results of his testing subsequently provided key evidence for a decision not to tear up and replace a sidewalk that froze soon after it was placed. Three years later, the sidewalk is still in excellent condition. **1 p; 86:890**

TILT-UP

Tilt-up Goes Multistory: Article illustrates three distinct generations of tilt-up construction methods in four-story office buildings designed and constructed in Dayton, Ohio since 1979. Differences from one generation to the next were primarily the result of the design/build team's effort to employ varied architectural treatments and give a distinctive appearance to the buildings. **3 pp; 86:97**

TOLERANCES

Design for Tolerances: The author points out that 30 years ago tolerance specifications were more general than specific; things were built on site and made to fit. In today's construction industry, building components are bought off-site to normal factory production tolerances, which in some cases may be measured in thousandths of an inch. The author believes that tolerances must be given greater attention during design to prevent many types of problems. **2 pp; 86:491**

WATERPROOFING

Waterproofing Concrete Below Grade: Residential foundations are the primary consideration in this article. Five key points to achievement of a waterproof basement are discussed in some detail. Special attention is given to sixteen desirable characteristics of waterproofing materials for use below grade. Tables show the relative performance of various classes of basement waterproofing systems and a general classification of them. Techniques for applying the materials are explained. **5 pp; 86:384**

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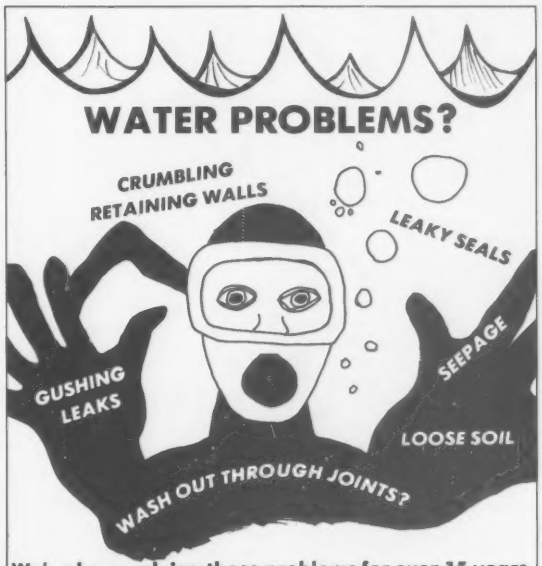

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